ORDER NO. CPD1108207AE

Service Manual

Simplified

Notebook Computer

Model No. **CF-31KQH41DM**

TOUGHBOOK

This is the Service Manual for the following areas.
M ...for U.S.A. and Canada

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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WARNING

For U.K.

This apparatus must be earthed for your safety.

To ensure safe operation the three-pin plug must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring.
Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe.
For your safety, if you have any doubt about the effective earthing of the power point, consult a qualified electrician.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 3 amp fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 3 amps and that it is approved by ASTA or BSI to BS 1362.

Check for the ASTA mark ⓐ or the BSI mark ⓚ on the body of the fuse.
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.
If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

Warning: THIS APPLIANCE MUST BE EARTHED.

Important

The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

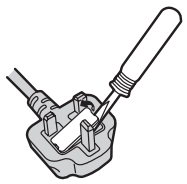
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured GREEN-and-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ coloured GREEN or GREEN-and-YELLOW.

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured BLACK.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured RED.

The mains plug on this equipment must be used to disconnect the mains power.
Please ensure that a socket outlet is available near the equipment and shall be easily accessible.

■ How to replace the fuse

Open the fuse compartment with a screwdriver and replace the fuse.



Warnings

- This equipment is not designed for connection to an IT power system.
  (An IT system is a system having no direct connections between live parts and Earth; the exposed-conducive-parts of the electrical installation are earthed.
  An IT system is not permitted where the computer is directly connected to public supply systems in the U.K.)
- Disconnect the mains plug from the supply socket when the computer is not in use.

This equipment is produced to BS800/1983.

LASER SAFETY INFORMATION

Class 1 LASER Product

PRODUCT COMPLIES WITH DHHD RULES 21 CFR CHAPTER 1,SUBCHAPTER J. 130KS

This equipment is classified as a class 1 level LASER product and there is no hazardous LASER radiation.

Caution

(1) Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure.

(2) The drive is designed to be incorporated into computer-based system or unit which has an enclosing cover. It should never be used as a stand alone drive.

Danger

The serviceman should not remove the cover of drive unit and should not serve, because the drive unit is a non-serviceable part..

- Unplug the AC power cord to the equipment before opening the cover of the drive.
- When the power switch is on, do not place your eyes close to the front panel cover to look into the interior of the unit.

LASER Specification

Class 1 Level LASER Product

Wave Length: DVD: 656 – 665 nm, CD: 777 – 790nm

SAFETY PRECAUTIONS

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacture's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.

Important Safety Instructions

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak. vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS

LITHIUM BATTERY

This computer contains a lithium battery to enable the date, time, and other data to be stored. The battery should only be exchanged by authorized service personel.

Warning! A risk of explosion from incorrect installation or misapplication may possibly occur.

LITHIUM BATTERY ⚠

- **CAUTION**

  Danger of explosion if battery is incorrectly replaced.
  Replace only with the same or equivalent type recommended by the manufacturer.
  Discard used batteries according to the manufacturer's instructions.

LITHIUMBATTERIES ⚠

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch denselben order einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

PILE AU LITHIUM ⚠

ATTENTION: IL Y A DANGER D'EXPLOSION S' IL Y A REMPLACEMENT INCORRECT DE LA BATTERIE. REMPLACER UNIQUEMENT AVEC UNE BATTERIE DU MÈME TYPE OU D'UN TYPE RECOMMANDÉ PAR LE CONSTRUCTEUR. METTRE AU RÉBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS DU FABRICANT.

Precautions (Battery Pack)

Do Not Use With Any Other Product
The battery pack is rechargeable and was intended for the specified product. If it is used with a product other than the one for which it was designed, electrolyte leakage, generation of heat, ignition or rupture may result.

Do Not Charge the Battery Using Methods Other Than Those Specified
If the battery is not charged using one of the specified methods, electrolyte leakage, generation of heat, ignition or rupture may result.

Do Not Throw the Battery Pack Into a Fire or Expose It to Excessive Heat
Generation of heat, ignition or rupture may result.

Avoid Extreme Heat (Near the Fire, In Direct Sunlight, for Example)
Electrolyte leakage, generation of heat, ignition or rupture may result.

Do Not Insert Sharp Objects Into the Battery Pack, Expose It to Bumps or Shocks, Disassemble, or Modify It
Electrolyte leakage, generation of heat, ignition or rupture may result.
- If this product is subjected to a strong impact, stop using it immediately.

Do Not Short the Positive (+) and Negative (-) Contacts
Generation of heat, ignition or rupture may result.
- Do not place the battery pack together with articles such as necklaces or hairpins when carrying or storing.

Do Not Use This Product with a Battery Pack Other Than the One Specified
Use only the specified battery pack (CF-VZSU46AU) with your product. Use of battery packs other than those manufactured and supplied by Panasonic may present a safety hazard (generation of heat, ignition or rupture).

When the battery pack has become degraded, replace it with a new one
Continued use of a damaged battery pack may result in heat generation, ignition or battery rupture.
- Do not touch the terminals on the battery pack. The battery pack may no longer function properly if the contacts are dirty or damaged.
- Do not expose the battery pack to water, or allow it to become wet.
- If the battery pack will not be used for a long period of time (a month or more), charge or discharge (use) the battery pack until the remaining battery level becomes 30% to 40% and store it in a cool, dry place.
- This computer prevents overcharging of the battery by recharging only when the remaining power is less than approx. 95% of capacity.
- The battery pack is not charged when the computer is first purchased. Be sure to charge it before using it for the first time. When the AC adaptor is connected to the computer, charging begins automatically.
- Should the battery leak and the fluid get into your eyes, do not rub your eyes. Immediately flush your eyes with clear water and see a doctor for medical treatment as soon as possible.

CAUTION:
Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

ATTENTION:
Il y a risque d'explosion si la batterie est remplacée par une batterie de type incorrect.
Mettre au rebut les batteries usagées conformément aux instructions.

NOTE

- The battery pack may become warm during recharging or normal use. This is completely normal.
- Recharging will not commence if internal temperature of the battery pack is outside of the allowable temperature range (0 °C to 50 °C {32°F to 122 °F}).
  (➔ *Reference Manual* "Battery Power") Once the allowable range requirement is satisfied, charging begins automatically. Note that the recharging time varies based on the usage conditions. (Recharging takes longer than usual when the temperature is
  10 °C {50 °F} or below.)
- If the temperature is low, the operating time is shortened. Only use the computer within the allowable temperature range.
- This computer has a high temperature mode function that prevents the degradation of the battery in high temperature environments. (➔ *Reference Manual* "Battery Power") A level corresponding to a 100% charge for high temperature mode is approximately equivalent to an 80% charge level for normal temperature mode.
- The battery pack is a consumable item. If the amount of time the computer can be run by using a particular battery pack becomes dramatically shorter and repeated recharging does not restore its performance, the battery pack should be replaced with a new one.
- When transporting a spare battery inside a package, briefcase, etc., it is recommended that it be placed in a plastic bag so that its contacts are protected.
- Always power off the computer when it is not in use. Leaving the computer on when the AC adaptor is not connected will exhaust the remaining battery capacity.



A lithium ion battery that is recyclable powers the product you have purchased.
Please call 1-800-8-BATTERY for information on how to recycle this battery.

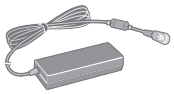
L'appareil que vous vous êtes procuré est alimenté par une batterie au lithium-ion.
Pour des renseignements sur le recyclage de la batterie, veuillez composer le 1-800-8-BATTERY.

Precautions (AC Adaptor)

FOR USE WITH MODEL NO. **CF-AA5713A**

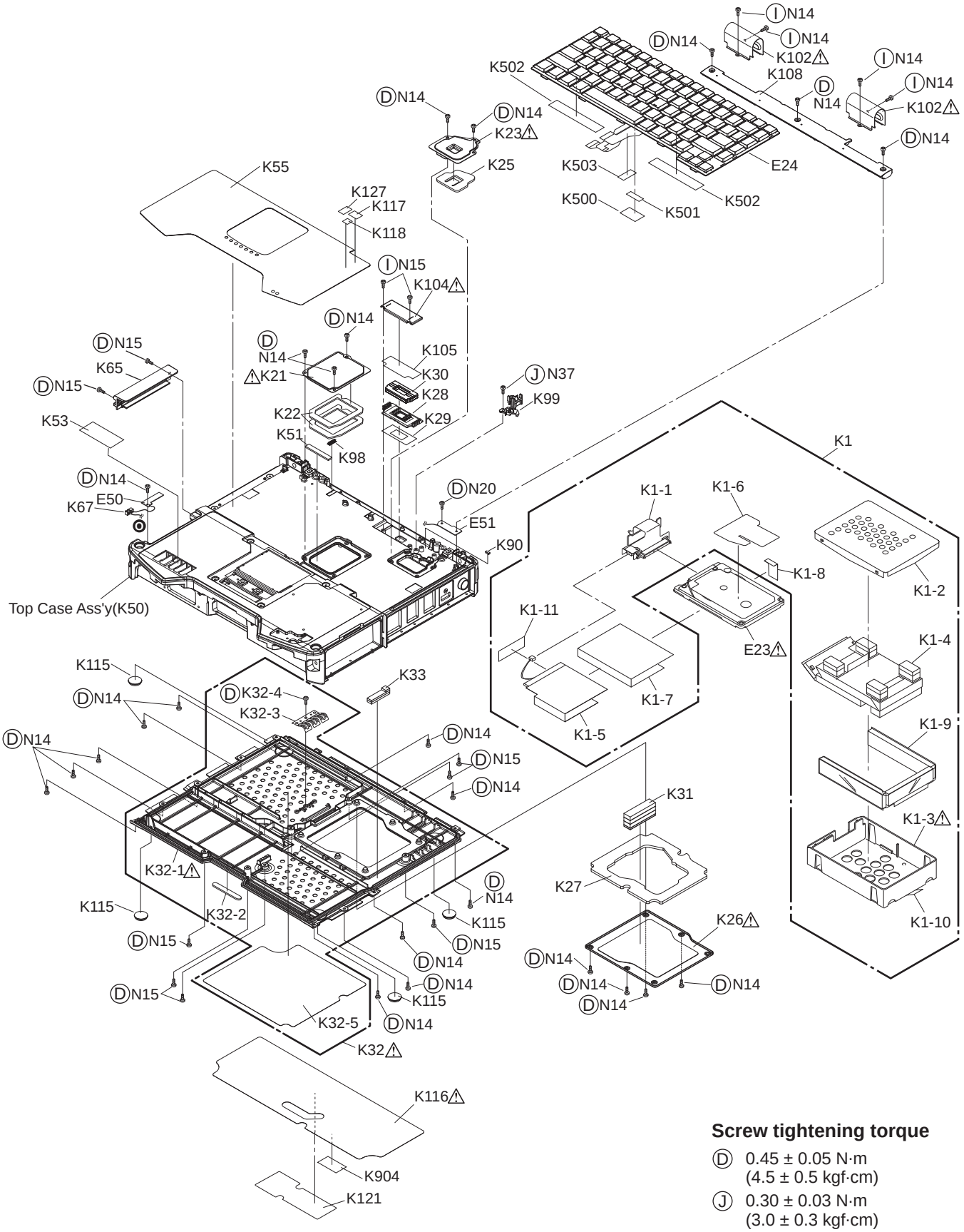
POUR UTILISER AVEC MODÈLE **CF-AA5713A**

Use Only the Specified AC Adaptor With This Product
Using an AC adaptor other than the one supplied (attached to your product or supplied by Panasonic) may result in a fire.



Model No: CF-AA5713A

Exploded View

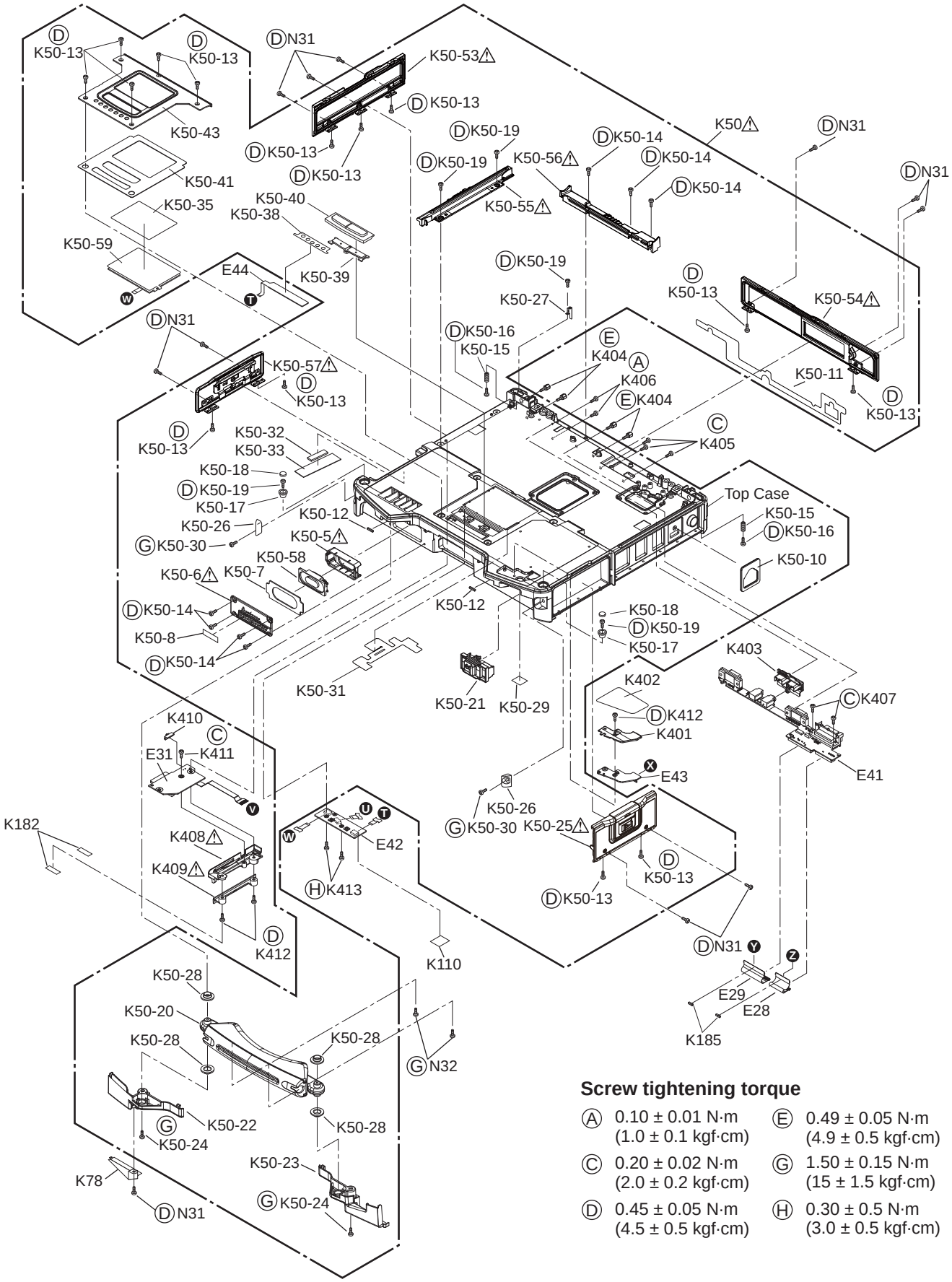


Screw tightening torque

Ⓓ 0.45 ± 0.05 N·m
(4.5 ± 0.5 kgf·cm)

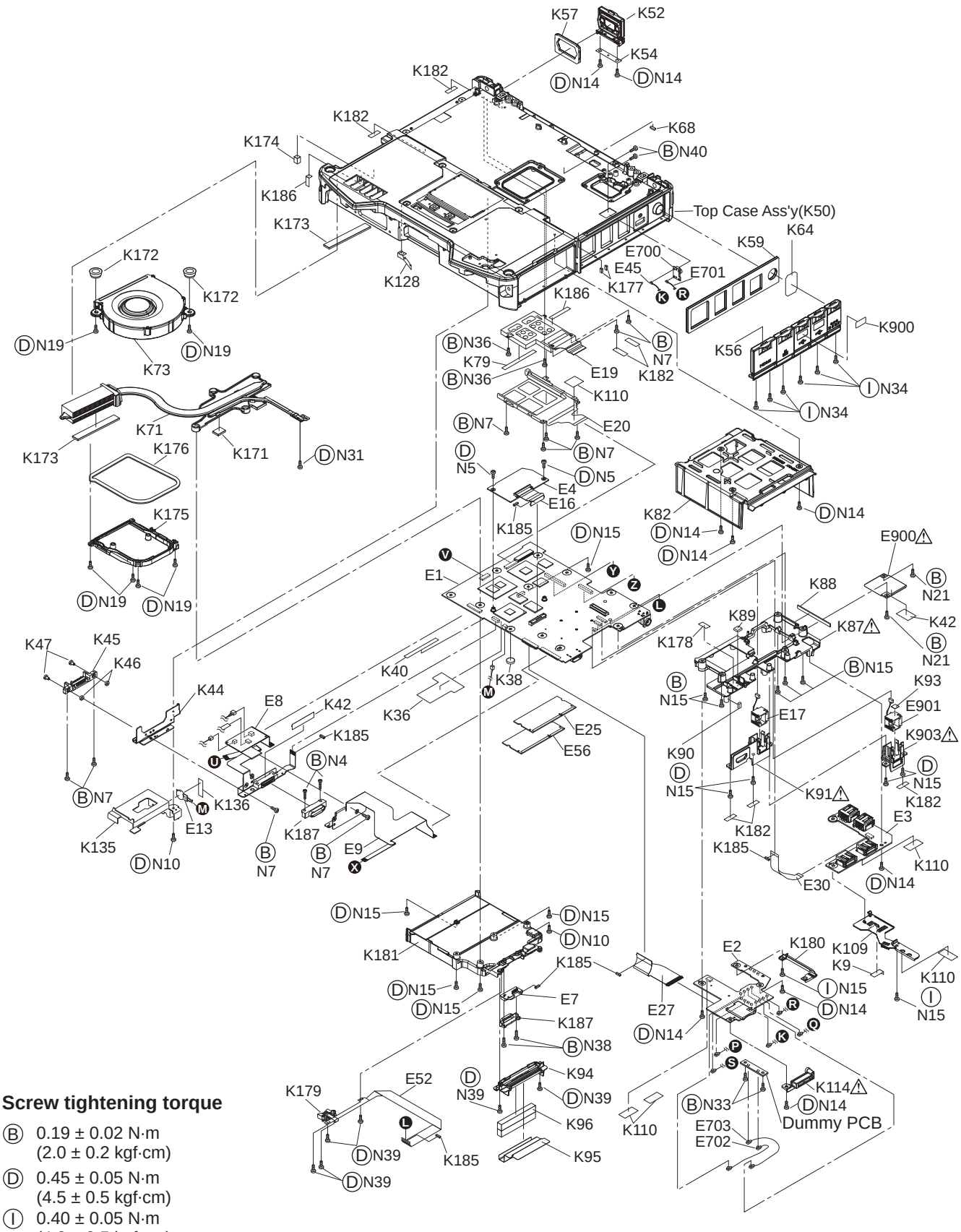
Ⓙ 0.30 ± 0.03 N·m
(3.0 ± 0.3 kgf·cm)

Ⓘ 0.40 ± 0.05 N·m
(4.0 ± 0.5 kgf·cm)



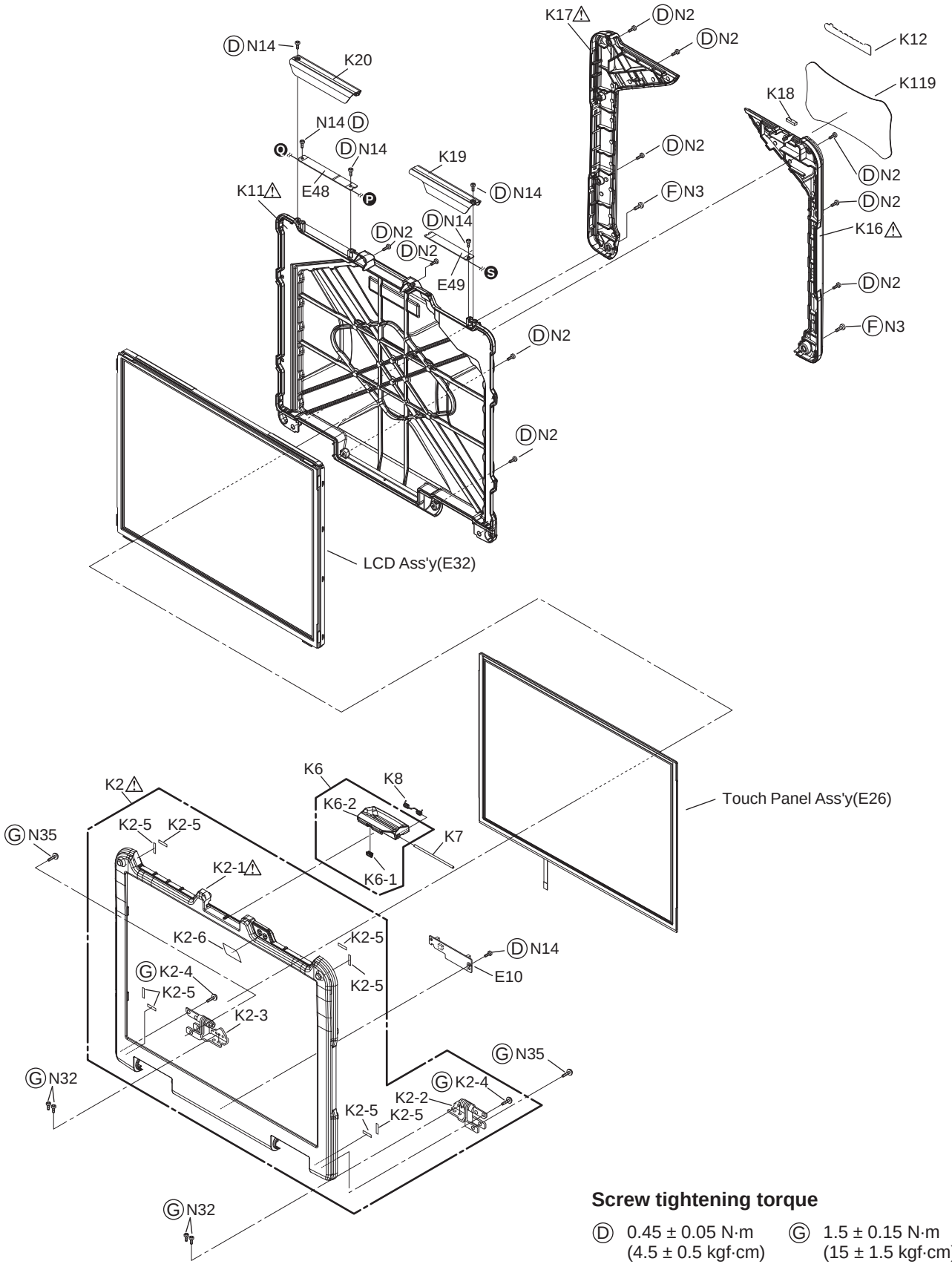
Screw tightening torque

Ⓐ	0.10 ± 0.01 N·m (1.0 ± 0.1 kgf·cm)	Ⓔ	0.49 ± 0.05 N·m (4.9 ± 0.5 kgf·cm)
Ⓒ	0.20 ± 0.02 N·m (2.0 ± 0.2 kgf·cm)	Ⓖ	1.50 ± 0.15 N·m (15 ± 1.5 kgf·cm)
Ⓓ	0.45 ± 0.05 N·m (4.5 ± 0.5 kgf·cm)	Ⓗ	0.30 ± 0.5 N·m (3.0 ± 0.5 kgf·cm)



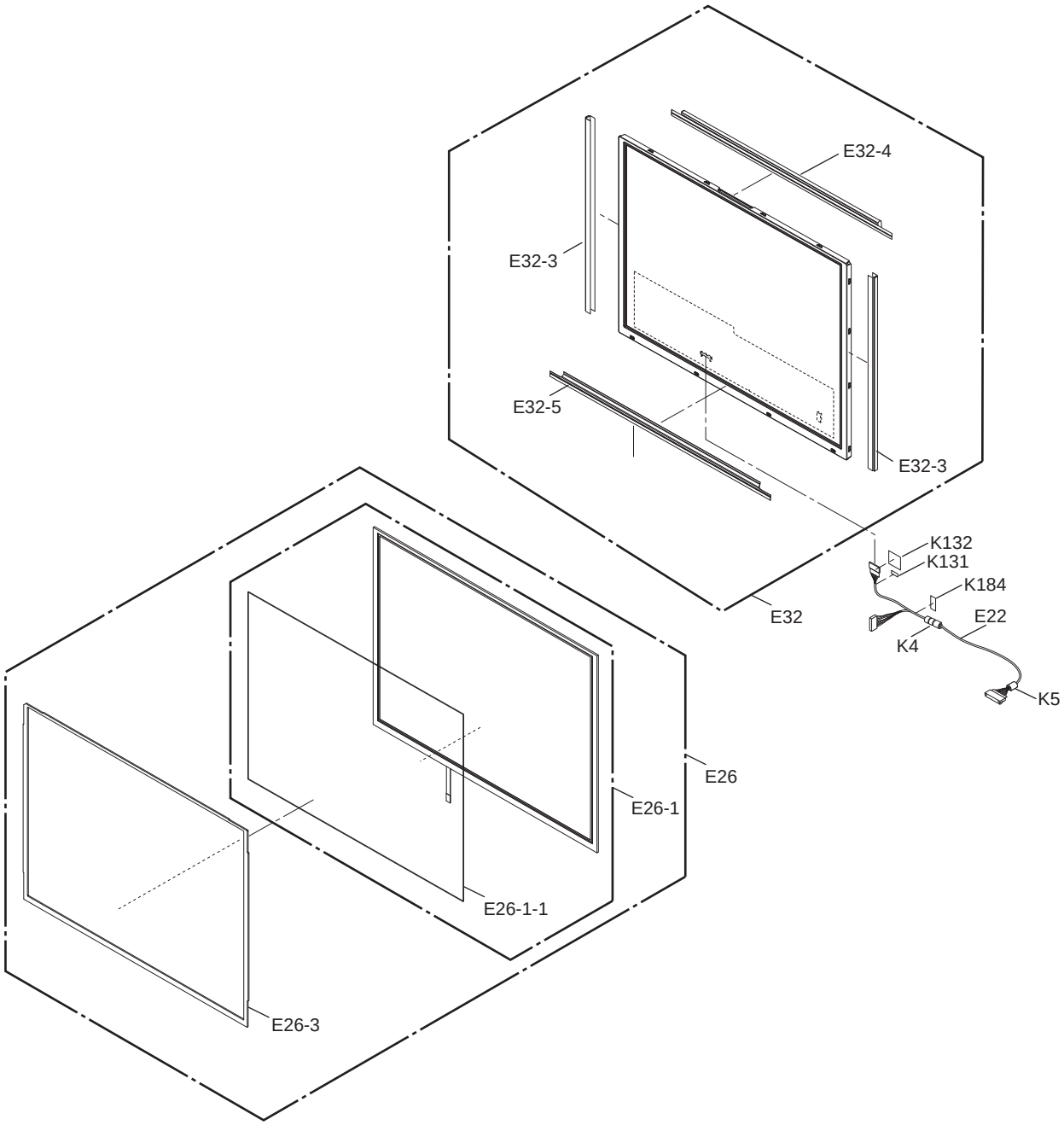
Screw tightening torque

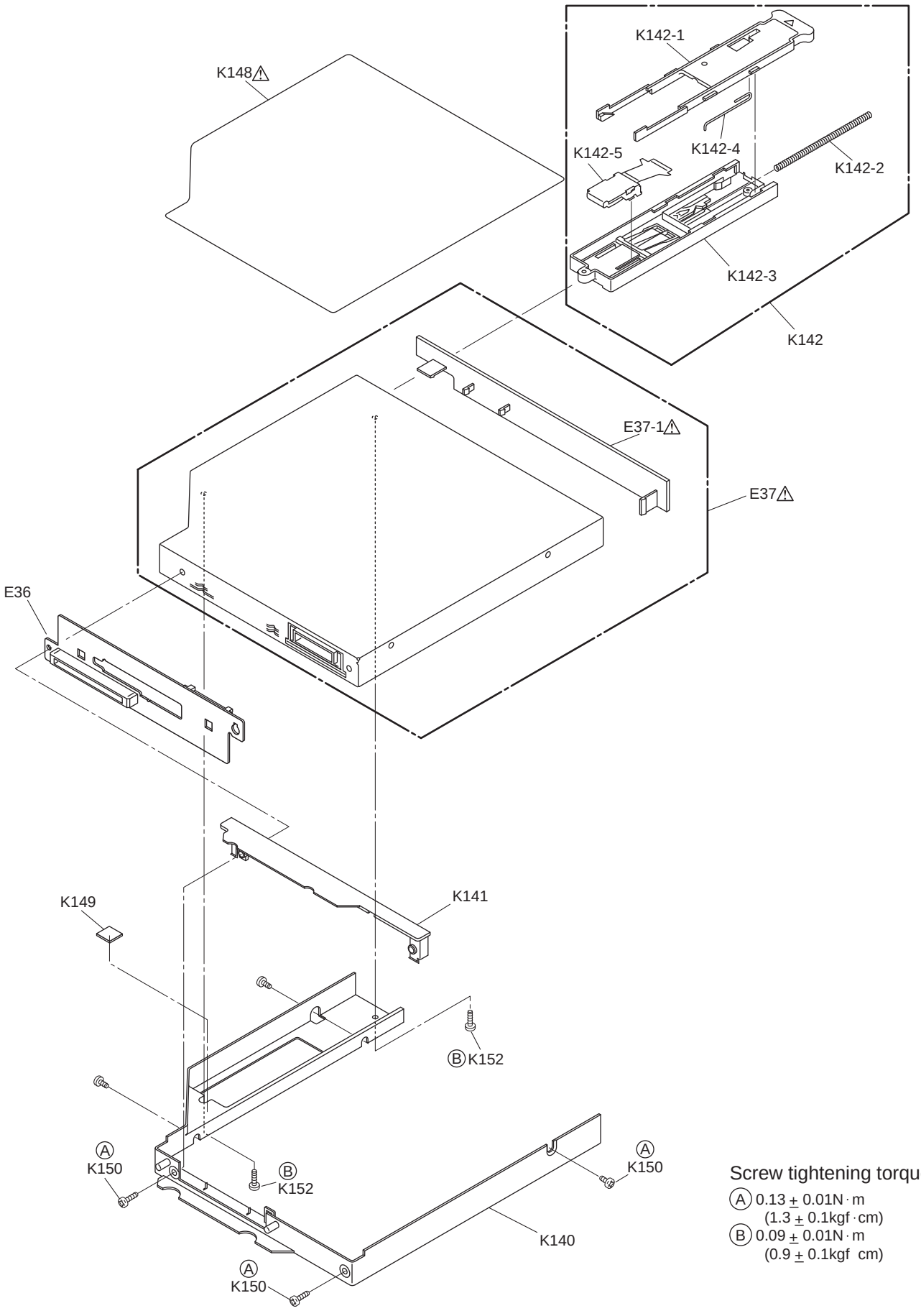
- Ⓑ 0.19 ± 0.02 N·m (2.0 ± 0.2 kgf·cm)
- Ⓓ 0.45 ± 0.05 N·m (4.5 ± 0.5 kgf·cm)
- Ⓘ 0.40 ± 0.05 N·m (4.0 ± 0.5 kgf·cm)



Screw tightening torque

- Ⓓ 0.45 ± 0.05 N·m (4.5 ± 0.5 kgf·cm)
- Ⓖ 1.5 ± 0.15 N·m (15 ± 1.5 kgf·cm)
- Ⓕ 1.47 ± 0.2 N·m (15 ± 2.0 kgf·cm)


E32-4
E32-3
E32-5
E32-3
K132
K131
K184
E22
K4
K5
E32
E26
E26-1
E26-1-1
E26-3



Screw tightening torque

Ⓐ 0.13 ± 0.01N · m
(1.3 ± 0.1kgf · cm)

Ⓑ 0.09 ± 0.01N · m
(0.9 ± 0.1kgf cm)

Replacement Parts List Comparison Table

Note : Important Safety Notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

CF-31KQH41DM

REF. NO and AREA	PART NO.		DESCRIPTION	Q'TY
	CF-31JEGAXDM	CF-31KQH41DM		
Main Block Unit				
E5	DL34U2007AAA	------	PCB, BT	1->0
E6	DL35U2007AAA	------	PCB, ENT ANT S	1->0
E10	DL3UP1827CAA	------	TOUCH SCREEN CONTROLLER UNIT	1->0
E10	------	DL3UP2079BAA	PCB, TS UNIT	0->1
E15	DFJK10T023BB	------	BT FFC	1->0
E21 ⚠	N5HZC0000056	------	WIRELESS LAN MODULE	1->0
E24	N2ABZY000152	------	KEYBOARD US NRP	1->0
E24	------	N2ABZY000030	CHICLET BACKLIT KB NRP	0->1
E36	------	DL3UP1823AAA	ODD PWB UNIT	0->1
E37 ⚠	------	DFWV78A0274	DVD MULTI DRIVE	0->1
E37-1 ⚠	------	DFKM9068ZA-0	MP BEZEL ASS'Y	0->1
E47	DFJS1341ZA	------	CABLE (WHITE, WLAN MAIN)	1->0
E56	------	N5ZZ00000211	SO-DIMM, DDR3-1333MHZ 4GB	0->1
E700	------	DL3UP1355DAA	PCB, DUAL PASS UNIT	0->1
E701	------	DFJS1321ZA	CABLE	0->1
E702	------	DFJS1340ZA	CABLE	0->1
E703	------	DFJS1342ZA	CABLE NRP	0->1
E900 ⚠	------	N5HAZ0000023	WIRED MODEM MODULE MDC	0->1
E901	------	DFJS1230ZA	MODEM CABLE	0->1
Accessories				
A1 ⚠	DFQW5516ZBT	------	MANUAL(CF-31MK2 M)	1->0
A1 ⚠	------	DFQW5516YAT	MANUAL(CF-31MK2)	0->1
A6 ⚠	NCR-B/916BE	NCR-B/922AE	LITHIUM ION BATTERY PACK	1
Packing Material				
P2	------	DFPP0163ZA	PROTECTION BAG	0->3
P3	DFPK1291ZAT	------	PACKING CASE	1->0
P3	------	DFPK1291YAT	PACKING CASE	0->1
P5	DFPK1293ZAT	DFPK1293YBT	ACCESSORY BOX	1
P6	------	DFPK1294ZAP	PACKING CASE	0->1
P7	------	DFPN0839ZA	CUSHION A	0->2
P8	------	DFPN0840ZA	CUSHION B	0->2
Mechanical Parts				
K6	DFBS8004ZA-0	------	LCD LATCH ASS'Y	1->0
K6	------	DFBS8004ZA-1	LCD LATCH ASS'Y (BC)	0->1
K6-2	DFBS0081ZA-0	------	LCD LATCH	1->0
K6-2	------	DFBS0081ZA-1	LCD LATCH (BC)	0->1
K9	------	DFHE0358ZA	MODEM CONDUCTIVE TAPE NRP	0->1
K11 ⚠	DFKM8211YA-0	------	LCD REAR ASS'Y	1->0
K11 ⚠	------	DFKM8211ZA-1	LCD REAR ASS'Y (BC)	0->1
K12	DFGB0131YA-0	------	PANASONIC BADGE NRP	1->0
K12	------	DFGB0131YA-2	PANASONIC BADGE GRAY NRP	0->1
K21 ⚠	------	DFKE1024ZA	KB CABLE COVER	0->1
K22	DFHG2232YA	DFHG2232YA	KB CABLE COVER CUSHION NRP	1->2
K24	DFHE0954YA	------	GASKET(HDD) 65TSV7-7-10 NRP	1->0
K39	DFMC0964ZA	------	WLAN SHEILD SHEET NRP	1->0
K41	DFHR3S36ZA	------	KB SPACER NRP	1->0
K42	DFMX0634ZA	DFMX0634ZA	CD EDGE SHEET NRP	1->2
K50 ⚠	DFKM8217YA-0	------	TOP CASE ASS'Y	1->0
K50 ⚠	------	DFKM8217YA-1	TOP CASE ASS'Y BLACK	0->1
K50-20	DFKH8011ZA-0	------	HANDLE ASS'Y	1->0
K50-20	------	DFKH8011ZA-1	HANDLE ASS'Y (BC)	0->1
K92 ⚠	DFKE1014YA	------	CONFIG USB ONLY HOLDER	1->0

K93	------	DFHR3R06ZA	LAN SPACER SHEET	NRP	0->1
K94	DFHR6635ZA	DFHR6635YA	DIMM STOPPER 2		1
K102 ⚠	DFKE1025ZAT0	------	HINGE COVER		2->0
K102 ⚠	------	DFKE1025ZAT1	HINGE COVER BLACK		0->2
K106	DFHE1082ZA	------	GASKET		2->0
K110	DFMX0383TA	DFMX0383TA	INSULATION PARTS	NRP	8->6
K112	DFMY0526YA	------	W-LAN HEAT SPREADER	NRP	1->0
K113	DFMX1468YA	------	BT INS SHEET	NRP	1->0
K117	DFQT0117ZA	------	CORE I5 VPRO 2G LABEL		1->0
K117	------	DFQT0118ZA	CORE I5 2G LABEL		0->1
K119	DFGB0165XB-0	------	TOUGH BADGE NEW		1->0
K119	------	DFGB0165YA-1	TOUGH BADGE NEW (BC)		0->1
K140	------	DFHR6534ZA-0	MP CABI BOTTOM		0->1
K141	------	DFHR6533ZA-0	MP CABI FRONT		0->1
K142-1	------	DFBE0014ZA-0	MP LOCK KNOB		0->1
K142-2	------	DFUQ0115ZA	MP KNOB SPRING		0->1
K142-3	------	DFHR6265ZA	MP LOCK HOLDER		0->1
K142-4	------	DFUN0085ZA	MP LOCK GUIDE SPRING		0->1
K142-5	------	DFUS0318ZB	MP KNOB BACK UP SPRING		0->1
K148 ⚠	------	DFGT0944WA	DRIVE SET LABEL		0->1
K149	------	DFHP7200ZA	AHDESIVE TAPE		0->1
K150	------	DRHM5067YA	SCREW		0->3
K152	------	XQN2+BJ4FJK	SCREW		0->2
K500	------	DFHE0513ZA	EMI SHEET	NRP	0->1
K501	------	DFHP7118ZA	TAPE	NRP	0->1
K502	------	DFHP7391ZA	KBD FIX TAPE	NRP	0->2
K503	------	DFHP7400ZA	KBD FPC TAPE	NRP	0->1
K900	------	DFGE0196YA	LAN MODEM CONFIG LABEL(MODEM)		0->1
K901	DFQR0242ZA	------	FCC ID LABEL TAYLERPEAK		1->0
K903 ⚠	------	DFKE1012YA	CONFIG MODEM HOLDER		0->1
K904	------	DFQT6294ZA	FCC ID BLIND LABEL		0->1
N4	------	DRQT2+E8FKL	SCREW		0->2
N5	XSB2+3FNL	XSB2+3FNL	SCREW		4->2
N16	DRSB26+3FKLT	------	SCREW		2->0
N21	------	DFHE5025XAK	SCREW	NRP	0->2
N40	------	DRQT2+G6FKK	SCREW		0->2